Fact Sheets and Information Papers

Water-Based Paint Formulations

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Background: Water-based paints, sometimes referred to as latex paints, have been evaluated as alternatives to solvent-based paints. The volatile organic compound (VOC) content of water-based paints is significantly lower than conventional solvent-based paints, thereby reducing VOC emissions. Latex paints may include such resins as acrylics, vinyls, and epoxies, among others. In addition to the resins, latex paint is made up of some solvents, pigments, and additives.

Water-based paints contain small amounts of coalescing solvents that allow the resin particles to fuse together (coalesce) as the water evaporates, forming a continuous surface coating. Latex paints must be protected from freezing and applied at a minimum temperature of 50 degrees Fahrenheit. Latex paints are easily applied and cleanup is performed with soap and water. Latex paints are less detrimental to the environment than oil-based paints because they contain fewer hazardous materials, reducing hazardous waste (HW) generation (depending on the type of paint used).

Benefits: Using a water-based paint decreases HW generation because the process does not generate spent cleanup solvents (requiring only soap and water for cleanup) and most latex paints do not need to be managed as a HW. Using latex paints may also help facilities reduce their generator status and lessen their regulatory burden under the Resource Conservation and Recovery Act, reducing requirements such as recordkeeping, reporting, inspections, and accumulation time limits.

Because latex paints contain less solvent than oil-based paints, reductions in VOC emissions and worker exposure can be expected, along with less likelihood of a facility exceeding the reporting thresholds under the Superfund Amendments and Reauthorization Act (SARA Title III).

Disadvantages: Water-based paints can rust steel and can adversely affect some aluminum surfaces. Application equipment must be constructed of a corrosion-resistant material. Water-based paint may have lower chemical and solvent resistance and has a reduced temperature resistance. Latex paint coatings are also sensitive to humidity. Low humidity can cause coatings to dry extremely fast, creating craters in the final film. High humidity can cause very slow drying times, resulting in sagging.

Disposal: Attempts should be made to turn in unused paints to the installation Environmental Office's reissue program, if available. Unused paints that cannot be reused must be disposed of in accordance with applicable environmental regulations. Depending on State or local regulations, unused latex paints may be air dried and disposed in landfills as non-hazardous waste. However, unwanted or expired paints should never be dumped into sanitary or storm sewers. Brushes, rollers, and spray guns used with water-based paints can be rinsed with tap water that can usually be discharged to the sanitary sewer.

Water-Based Paint Types: Because latex coatings may not meet the requirements for solvent resistance and temperature, as required for some applications, other paint types may need to be used. The following is a description of some nationally stock-listed water-based paints and their possible applications:

Exterior Acrylic Latex Paint: suitable for use on concrete, masonry, stucco, and wood. Can also be used for interior applications.

Concrete Floor Sealer/Finisher: resin-based, water emulsion sealing and finishing compound for use on cured and uncured concrete floors. It may also be used on other masonry, linoleum, rubber tile, magnesite, and troweled asphalt.

Traffic and Airfield Marking Paint: water-based, 100 % acrylic, suitable for application on traffic bearing surfaces such as Portland cement concrete, bituminous cement concrete, asphalt, tar, and previously painted areas of those surfaces.

Latex Stain: intended for new or previously stained exterior wood surfaces.

Recycled Latex Paint: contains a minimum of 50 percent post-consumer waste and is intended for use on interior or exterior wallboard, concrete, stucco, masonry, and wood.

Stencil Paint: Water-emulsion paint, intended for markings and for obliterating markings on wood and fiberboard containers.

Water-Based Metal Primer: acrylic primer, can be used on exterior or interior metal surfaces in all non-marine environments.

Water-Based Epoxy Coating Kits: formulated for use on wood and concrete floors, these coatings are water-based, non-flammable, non-toxic.

Semigloss Paint, Water-Based for Metal Surfaces: acrylic or modified acrylic topcoat paint is suitable for use on exterior or interior metal surfaces in all non-marine environments.

Internet Resources: One resource of water-based paints is the General Services Administration (GSA) at https://www.gsaadvantage.gov/ .

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